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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/500,350
Filing Date: February 09, 2005
Appellant(s): MARUTIAN ET AL.

Wendy K. Marsh
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 17, 2008 (with supplemental Appeal Brief filed February 2, 2009) appealing from the Office action mailed June 12, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is deficient. 37 CFR 41.37(c)(1)(v) requires the summary of claimed subject matter to include: (1) a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number, and to

the drawing, if any, by reference characters and (2) for each independent claim involved in the appeal and for each dependent claim argued separately, every means plus function and step plus function as permitted by 35 U.S.C. 112, sixth paragraph, must be identified and the structure, material, or acts described in the specification as corresponding to each claimed function must be set forth with reference to the specification by page and line number, and to the drawing, if any, by reference characters. The brief is deficient because the Examiner disagrees with the following positions by appellant:

(1) in the Summary of Claim 1, appellant argues that it is shown at Pub. App., para. 4, lines 1-7, that aluminum coatings are applied without preheating to within austenitic temperatures prior to the plunging step. The Examiner disagrees that this is shown for the reasons discussed in the new matter rejection of this requirement below (Ground A (A)).

(2) in the Summary of Claim 2, appellant argues that it is shown at Pub. App., para. 4, lines 1-7, that aluminum coatings are applied without preheating to within austenitic temperatures prior to the plunging step. The Examiner disagrees that this is shown for the reasons discussed in the new matter rejection of this requirement below (Ground A (A)). Appellant further argues that it is shown at Pub. App., para. 6, lines 6-14, that the aluminum coatings are further applied without the presence of copper in the melt (Ground A (B)). The Examiner disagrees that this is shown for the reasons discussed in the new matter rejection of this requirement below.

(3) in the Summary of Claim 3, appellant argues that it is shown at Publ. App., para. 7, lines 1-2 and para. 13, Table 1, that the temperature of the melt is in the range of 660-680 degrees C for a period of 2 minutes or less. The Examiner disagrees that this is shown for the reasons discussed in the new matter rejection of this requirement below (Ground A (C)); moreover as worded by appellant in this section, it appears that the melt is heated for two minutes or less, whereas it is understood in the claim that the plunging is for two minutes or less.

(4) in the Summary of Claim 4, appellant argues that it is shown at Pub. App., para. 4, lines 1-7, that aluminum coatings are applied without preheating to within austenitic temperatures prior to the plunging step (Ground A (A)). The Examiner disagrees that this is shown for the reasons discussed in the new matter rejection of this requirement below.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

GROUNDS OF REJECTION NOT ON REVIEW

The following grounds of rejection have not been withdrawn by the examiner, but they are not under review on appeal because they have not been presented for review in the appellant's brief:

In the Final Rejection, all Grounds of Rejection noted by appellant (Grounds A - E), also applied to claim 4. Claim 4 has not been canceled by appellant, rather appellant has simply provided that claims 1-3 and 5 are appealed as noted in the Introduction section at page 1 of the Appeal Brief. The Examiner maintains her rejection of claim 4, and has included the reasons for this rejection in the **Grounds of Rejection** section below.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,655,852	RALLIS	4-1987
4,070,210	GIEREK ET AL	1-1978
50-005213	JAPAN	1-1975

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Ground A. Claims 1-5 stand finally under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably

convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

(A) **Claim 1, line 14**, provides that said aluminum coatings are applied without . . . "or preheating to within austenitic temperatures prior to the plunging step" as is now claimed by the amendment of October 12, 2007 and April 14, 2008. As well, **claim 2, line 14** also makes this requirement, **claim 4, lines 13-14**, provides that said aluminum coatings are applied without . . . "or preheating to within austenitic temperatures prior to the plunging step the product prior to plunging in the melt", and **claim 5, lines 16-17**, provides that said aluminum coatings are applied without . . . "or preheating to within austenitic temperature prior to the plunging step". The Examiner has reviewed the disclosure as originally filed, however, there is no support for excluding such preheating. The original disclosure provides "product surface preparing" (as in claim 1, line 2) and then coating with the aluminum melt. This claimed feature is a "negative limitation", and as discussed in MPEP 2173.05(i):

> Any negative limitation or exclusionary proviso must have basis in the original disclosure. If alternative elements are positively recited in the specification, they may be explicitly excluded in the claims. See In re Johnson, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (CCPA 1977) ("[the] specification, having described the whole, necessarily described the part remaining."). See also Ex parte Grasselli, 231 USPQ 393 (Bd. App. 1983), aff 'd mem., 738 F.2d 453 (Fed. Cir. 1984). The mere absence of a positive recitation is not basis for an exclusion. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Note that a lack of literal basis in the specification for a negative limitation may not be sufficient to establish a

> prima facie case for lack of descriptive support. Ex parte Parks, 30 USPQ2d 1234, 1236 (Bd. Pat. App. & Inter. 1993).

Here, there is simply no discussion one way or the other as to preheating features, and as discussed above, the mere absence of a positive recitation is not a basis for exclusion. The present disclosure provides generally "preparing the surface" with jet abrasive preparing and then goes on to describe specific features of the aluminum alloy coating using a melt. To one of ordinary skill in the art this simply does not amount to it being apparent that commonly known "preparing" steps would NOT be included, such as, as shown by Rallis and Gierek, conventionally known cleaning and preheating steps. In fact, from the shown prior art, it appears that one of ordinary skill in the art would expect preheating of the product to be coated to be conventional. Rather, the description in the disclosure merely indicates that the focus of the claimed invention is on the abrasive treatment and the details of the melt coating with the aluminum alloy. Here, a lack of disclosure about what happens before the focus of the claimed invention would not rise to a teaching that conventional steps necessarily do not happen.

(B) **Claim 2, line 13**, provides that said aluminum coatings are applied without . . . "presence of copper in the melt" as is now claimed by the amendment of April 14, 2008. The Examiner has reviewed the disclosure as originally filed, however, there is no support for excluding copper from the melt. Copper is never mentioned in the disclosure as originally filed, and is certainly never excluded from the alloy. The original disclosure provides that the aluminum alloy melt "is alloyed with zinc, silicon,

magnesium, tin . . ." (see page 2 of the specification, and original claim 1) and also that benefits are provided by "alloying the aluminum melt, comprising zinc, silicon, magnesium and tin" (page 3, second paragraph, of the specification), and also note comprising language at page 4, lines 1-2 of the specification. This open language of "comprising" indicates that the aluminum alloy provided must include zinc, silicon, magnesium and tin as claimed, but that other materials can be included in the alloy. The claimed exclusion of copper is a "negative limitation", and as discussed in MPEP 2173.05(i):

> Any negative limitation or exclusionary proviso must have basis in the original disclosure. If alternative elements are positively recited in the specification, they may be explicitly excluded in the claims. See In re Johnson, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (CCPA 1977) ("[the] specification, having described the whole, necessarily described the part remaining."). See also Ex parte Grasselli, 231 USPQ 393 (Bd. App. 1983), aff 'd mem., 738 F.2d 453 (Fed. Cir. 1984). The mere absence of a positive recitation is not basis for an exclusion. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Note that a lack of literal basis in the specification for a negative limitation may not be sufficient to establish a prima facie case for lack of descriptive support. Ex parte Parks, 30 USPQ2d 1234, 1236 (Bd. Pat. App. & Inter. 1993).

Here, there is simply no discussion one way or the other as to the use of copper, and as discussed above, the mere absence of a positive recitation is not a basis for exclusion. The present disclosure provides using an aluminum alloy with comprising language that indicates that the alloy can include other than the specifically listed ingredients. To one of ordinary skill in the art this simply does not amount to it being apparent that

commonly known further alloying materials, such as copper (see Japan 50-005213), cannot be used. In fact, from the shown prior art, it appears that one of ordinary skill in the art would expect inclusion of copper to be conventional. While appellant may not have provided support for specific inclusion of copper, appellant certainly did not provide support such that one reading the disclosure would know that copper must specifically be excluded. Appellant has made no showing that one of ordinary skill in the art would, from a reading of the present disclosure, necessarily think that copper was excluded.

(C) **Claim 3, line 10-11**, provides that said plunging in aluminum melts is "for a period of 2 minutes or less" as is now claimed by the amendment of April 14, 2008. The Examiner has reviewed the disclosure as originally filed, however, there is no support this time period of 2 minutes or less. All times of exposure (as described in Tables 1 and 2) to the melt, are 40 seconds or more and 120 seconds (2 minutes) or less. However, the 120 second time period is for a comparative example. The time of exposure for the actual inventive material is precisely 70 seconds in Table 1 and 70 or 80 seconds in Table 2. Thus, there is simply no support for the broad range claimed and the claim contains new matter.

Ground B. Claims 1-5 stand finally rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one

skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1, last three lines, "said aluminum coatings further achieving a Mandrel test of 10 mm, whereby said Mandrel test uses a mandrel having minimum diameter of 10 mm". The specification describes testing "plasticity of the coatings" by "testing the pattern on bending around the cylindrical mandrel, while wending on which the coating on the pattern doesn't break" (page 3, first paragraph), with description of "Minimum diameter of mandrel, mm" in Table 1, which appears to indicate that "10 mm" refers to "diameter of mandrel". This simply does not provide an adequate description of how the "Mandrel test" works such that this test can be reproduced, understood or compared, and thus one of ordinary skill in the art would not be able to make and/or use the invention. First, it is unclear what is meant by "pattern" or "wending". Furthermore, it is unclear to what degree the "coating" is wound around the mandrel, such as, must it go 100%, 10 degrees, 90 degrees, etc. It is also unclear what thickness the substrate is or is not, which would clearly affect how much winding could occur. As well, it is not clear what the mandrel is made from. All of those features would affect the resulting results from using the "Mandrel test", and none are clarified in the disclosure or claims as filed. Moreover, if this is a known standardized test, such as an ASTM test, it is not clear from the claim or disclosure what this test would be. The disclosure has not referred to a specific test, but rather provided a

general description of a testing with bending **This rejection also applies to the use of "a Mandrel test" in claim 2, claim 3, claim 4 and claim 5**.

Ground C. Claims 1-5 stand finally rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 14, "or preheating to within austenitic temperatures prior to the plunging step" is confusing as to what is required. The claim does not clarify what is preheated (the product to be coated?, the aluminum alloy?), what austenitic temperatures are referred to (the product?, the aluminum alloy?). As worded, any of these can be referred to. **This rejection also applies the use of preheating as claimed in claim 2, claim 4 and claim 5.**

Claim 1, last three lines, "said aluminum coatings further achieving a Mandrel test of 10 mm, whereby said Mandrel test uses a mandrel having a minimum diameter of 10 mm". The specification describes testing "plasticity of the coatings" by "testing the pattern on bending around the cylindrical mandrel, while wending on which the coating on the pattern doesn't break" (page 3, first paragraph), with description of "Minimum diameter of mandrel, mm" in Table 1, which appears to indicate that "10 mm" refers to "diameter of mandrel". This simply does not provide an adequate description of how the "Mandrel test" works such that this test can be reproduced, understood or compared. First, it is unclear what is meant by "pattern" or "wending".

Furthermore, it is unclear to what degree the "coating" is wound around the mandrel, such as, must it go 100%, 10 degrees, 90 degrees, etc. It is also unclear what thickness the substrate is or is not, which would clearly affect how much winding could occur. As well, it is not clear what the mandrel is made from. All of those features would affect the resulting results from using the "Mandrel test", and none are clarified in the disclosure or claims as filed. Moreover, if this is a known standardized test, such as an ASTM test, it is not clear from the claim or disclosure what this test would be. **This rejection also applies to the use of "a Mandrel test" in claim 2, claim 3, claim 4 and claim 5.**

Claim 4, lines 13-14, "or preheating to within austenitic temperature prior to the plunging step the product prior to plunging in the melt" is confusing as worded, because "prior to the plunging step the product prior to plunging in the melt" appears to confusingly duplicate the "prior to the plunging" statements.

Ground D. Claims 1-2 and 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rallis (US 4655852) in view of Japan 50-005213 (hereinafter '213).

Rallis teaches a method of applying aluminum alloy coatings on steel products. *Column 2, lines 1-10, 34-50 and 64-68.* Rallis teaches that the product is first prepared for coating. *Column 2, lines 10-40 (heat treating) and column 6, lines 40-60 (heat treating and cleaning before coating).* The cleaning preparation can include grit blasting (which would be using a jet abrasive) the product. *Column 6, lines 40-60.* Rallis then teaches that the

prepared product is then plunged into a hot dip aluminum alloy melt bath to coat the product with the aluminum alloy. *Column 6, lines 55-68, for example and column 2, lines 35-50 and 64-68.* The temperature of the aluminum bath can be 1000 to below 1341 degrees F (approximately 538 to 727 degrees C). *Column 2, lines 34-40.* Rallis further teaches that the bath can include aluminum alloyed with zinc, silicon, magnesium and tin materials. *Column 2, line 64 through column 3, line 5 (from the selection from the list of materials provided).* The Examiner understands Rallis to perform the application of the aluminum coating without flux, as the process of Rallis has no teaching of applying flux *(see Examples I and II, for instance, columns 6 and 7).*

Claim 2: Rallis teaches alloying additives of copper can be used, but its use is optional. *See column 2, line 65 through column 3, line 5.*

Rallis teaches all the features of this claim except (1) the precise temperature of the melt bath and the precise amounts of zinc, silicon, magnesium, and tin to be used in the aluminum melt, (2) the mandrel test features (claims 1-2, 4-5) and (3) the lack of preheating (claims 1-2, 4-5).

However, '213 teaches that a desirable aluminum alloy composition for improved corrosion resistance includes, by weight, 2-18 % silicon, 2-8 % zinc, 0-2% magnesium and 0.1-1.5% Sn. See the Abstract, and page 2 of the translation. The Examiner notes that while the English language abstract refers to 0.5% copper in the alloy, this is a typographical error, and that '213 teaches 0-5% copper (which therefore means that no copper can be used), (as shown on page 61, 1st column in Japanese; page

2 of the translation) where " . . . Si 2-18%, Zn 2-8%, Cu 0-5%, Mg 0-2 % , Sn 0.1-15%. . . " is described, and also notes in the example in the abstract where 0.02 % copper is used which is below 0.5 % copper .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to (1) modify Rallis to optimize the temperature of the melt bath for the specific aluminum alloy used given that Rallis teaches a temperature range of approximately 538 to 727 degrees C, and where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Furthermore, it would have been obvious to modify Rallis to perform the hot dip coating of the aluminum alloy using an alloy with the components and range taught by '213 with an expectation of providing a desirably corrosion resistant plated article, because Rallis teaches a desirable method for providing hot dip coating of an aluminum alloy on a steel product using an aluminum alloy that can contain aluminum, zinc, silicon, magnesium and tin and '213 teaches a desirable aluminum alloy containing aluminum, zinc, silicon, magnesium and tin for improved corrosion protection. It would further have been obvious to optimize within the taught range of '213 to determine the optimum or workable ranges by routine experimentation. See In re Aller, 200 F.2d 454, 105 USPQ 233 (CCPA 1955). The Examiner understands the ranges given in '213 to be in weight percent as the description is in the conventional format for describing weight percent of alloys and as

page 2 of the translation indicates that the percentages are in weight percent. (2) As to the resulting coating meeting the claimed mandrel test features, the Examiner notes the confusion as to what is actually required by the Mandrel test as discussed in the 35 USC 112, first and second paragraph rejections above. However, it is the Examiner's position that the coating method provided by Rallis in view of '213 would provide a coating that meets the claimed Mandrel test, because Rallis in view of '213 provides a coated article with an aluminum alloy of the percentage requirements of zinc, silicon, magnesium and tin, which is what appears to be required to meet the Mandrel test as described by appellant in the specification, and the fact that appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). The Examiner also notes MPEP 2112, as noting that "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). (3) As to the coating without preheating as claimed, the Examiner notes the confusion as to what is actually required by the preheating as discussed in the 35 USC 112, second paragraph rejection above. However, it is the Examiner's position that it would have been obvious to perform the coating method of Rallis in view of '213 without preheating, to the extent claimed. While Rallis teaches a heating treatment of

the product before coating to within the austenitizing temperature of the product (*column 2, lines 15-25*), it would have been obvious to one ordinary skill in the art to modify Rallis in view of '213 to perform the coating process without the preheating process, as it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art. *In re Karlson*, 136 USPQ 184. Here, Rallis teaches that the preheating step allows for maintaining high strength carbon and steels after aluminizing (*column 3, lines 5-20*), and therefore, when high strength is not desired, it would have been obvious to eliminate the element of preheating, which allows saving time and energy. See also MPEP 2144.04, section II.

Ground E. Claims 1-5 stand finally rejected under 35 U.S.C. 103(a) as being unpatentable over Gierek et al (US 4070210) in view of Rallis (US 4655852) and Japan 50-005213 (hereinafter '213).

Gierek teaches a method of applying aluminum alloy coatings on cast iron and steel products. *Column 2, lines 35-65 and column 5, lines 25-26 and 44-45.* Gierek teaches that the product is first prepared for coating. *Column 5, lines 25-35 (preheating and cleaning before coating).* Gierek then teaches that the prepared product is then plunged into a hot dip aluminum alloy melt bath to coat the product with the aluminum alloy. *Column 5, lines 25-35, for example and column 2, lines 35-65.* The temperature of the bath can be 550-950 degrees C, such as 550 to 650 degrees C. *Column 2, lines 50-60 and column*

5, lines 25-30. Gierek further teaches that the bath can include aluminum alloyed with metal such as zinc, silicon, magnesium and tin materials. *Column 2, lines 50-55.* Gierek provides that the aluminum coatings can be applied without flux when desired. *Note Example VI, column 5, lines 25-40 where the coating is applied without any flux treatment as compared to Example VII, column 45-50, where a flux treatment is applied.*

Claim 1, 2, 4, 5: as to preheating the product, Gierek does not teach preheating to austenitic temperatures, as Gierek teaches preheating to 100 to 400 degrees C at most. *Column 2, lines 55-65 and see example VI, column 5, lines 25-30.*

Claim 2: Gierek teaches that copper can be an alloy material with aluminum alloy, but that its use is optional. *Column 2, lines 50-53.*

Claim 3: Gierek discloses that the time in the melt can be 1-10 minutes. *Column 3, lines 40-45.* It can also be 30 seconds to 10 minutes. *Column 4, lines 5-10.* Therefore, the time in the melt can be less than 2 minutes, such as 1 minute or 30 seconds, since In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

Gierek teaches all the features of this claim except (1) the pretreatment with jet abrasive, (2) precise temperature of the melt bath and the precise amounts of zinc, silicon, magnesium, and tin to be used in the aluminum melt and (3) the mandrel test features (claims 1-5).

Rallis teaches a method of applying aluminum alloy coatings on steel products. *Column 2, lines 1-10, 34-50 and 64-68.* Rallis teaches that the product is first prepared for coating. *Column 2, lines 10-40 (heat treating) and column 6, lines 40-60 (heat treating and cleaning before coating).* The cleaning preparation can include grit blasting (which would be a jet abrasive) the product. *Column 6, lines 40-60.* Rallis then teaches that the prepared product is then plunged into a hot dip aluminum alloy melt bath to coat the product with the aluminum alloy. *Column 6, lines 55-68, for example and column 2, lines 35-50 and 64-68.* The temperature of the bath can be 1000 to below 1341 degrees F (approximately 538 to 727 degrees C). *Column 2, lines 34-40.* Rallis further teaches that the bath can include aluminum alloyed with zinc, silicon, magnesium and tin materials. *Column 2, line 64 through column 3, line 5 (from a selection of the materials given).*

Moreover, '213 teaches that a desirable aluminum alloy composition for improved corrosion resistance includes, by weight, 2-18 % silicon, 2-8 % zinc, 0-2% magnesium and 0.1-1.5% Sn. See the Abstract, and page 2 of the translation. The Examiner notes that while the English language abstract refers to 0.5% copper in the alloy, this is a typographical error, and that '213 teaches 0-5% copper (which therefore means that no copper can be used), (as shown on page 61, 1st column in Japanese; page 2 of the translation) where " . . . Si 2-18%, Zn 2-8%, Cu 0-5%, Mg 0-2 % , Sn 0.1-15%. . . " is described, and also notes in the example in the abstract where 0.02 % copper is used which is below 0.5 % copper .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gierek to (1) provide that the "cleaning" process before coating includes grit blasting (jet abrasive treatment) as suggested by Rallis with an expectation of desirable cleaning results, because Gierek teaches to provide a "cleaning" process before aluminum alloy melt coating and Rallis teaches that it is well known for "cleaning" to include grit blasting when preparing a surface for aluminum alloy melt coating. (2) It would further have been obvious to modify Gierek in view of Rallis to optimize the temperature of the melt bath for the specific aluminum alloy used given that Gierek teaches a temperature range of approximately 550 to 950 degrees C, including 650 degrees C, and where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Furthermore, it would have been obvious to modify Gierek in view of Rallis to perform the hot dip coating of the aluminum alloy using an alloy with the components and range taught by '213 with an expectation of providing a desirably corrosion resistant plated article, because Gierek teaches a desirable method for providing hot dip coating of an aluminum alloy on an iron or steel product using an aluminum alloy that can contain aluminum and alloying metal such as zinc, silicon, magnesium and tin and Rallis also teaches to providing hot dip coating of an aluminum alloy on a steel product using an aluminum alloy that can contain aluminum and zinc, silicon, magnesium and tin, and that such alloy materials can be added in combination,

and '213 teaches a desirable aluminum alloy containing aluminum, zinc, silicon, magnesium and tin for improved corrosion protection. It would further have been obvious to optimize within the taught range of '213 to determine the optimum or workable ranges by routine experimentation. See In re Aller, 200 F.2d 454, 105 USPQ 233 (CCPA 1955). The Examiner understands the ranges given in '213 to be in weight percent as the description is in the conventional format for describing weight percent of alloys and as page 2 of the translation indicates that the percentages are in weight percent. (3) As to the resulting coating meeting the claimed mandrel test features, the Examiner notes the confusion as to what is actually required by the Mandrel test as discussed in the 35 USC 112, first and second paragraph rejections above. However, it is the Examiner's position that the coating method provided by Gierek in view of Rallis and '213 would provide a coating that meets the claimed Mandrel test, because Gierek in view of Rallis and '213 provides a coated article with an aluminum alloy of the percentage requirements of zinc, silicon, magnesium and tin, which is what appears to be required to meet the Mandrel test as described by appellant in the specification, and the fact that appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). The Examiner also notes MPEP 2112, as noting that "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old

composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999).

(10) Response to Argument

Ground A. Rejection Under 35 USC 112, first paragraph, Written Description

At pages 4-5 of the November 17, 2008 Appeal Brief, appellant provides a statement of case law as to written description requirements. At pages 5-6 of the Appeal Brief, appellant argues that as to the rejection that there is no support for excluding the preheating step (Ground A (A) the **Grounds of Rejection** above), with the present published application in paragraph 4 noting "[t]he disadvantage of the closest analog is impossibility of aluminum melt applying on cast iron and steel produces at the temperature lower than 715 °C. without using fluxes and the presence of intermetallic compounds of quite a big thickness (10-15 micrometers) make the coating brittle, which doesn't allow to deform the steel product with the aluminum coating hereinafter." Appellant further argues that the Summary of the Invention then notes that the present invention "solves the problem of decreasing the temperature of aluminum melt. . ." (pub. app. para. [0005]); and thus the disclosure specifically states that it solves the problem of applying aluminum melt at high temperatures by decreasing the temperature of the aluminum melt, and that such resolution in the art therefore cannot occur by including a preheating step. Appellant further argues that the Examiner has not met the initial burden of presenting evidence as to why a person

skilled in the art would not recognize in appellant's disclosure that its process is performed without preheating, with the Examiner instead citing MPEP 2173.05(i) for its discussion that the mere absence of a positive recitation is not a basis for an exclusion and noting that "there is simply no discussion one way or the other as to preheating features." Appellant argues that it is simply not the case, however, that Appellant is simply silent as to this feature of the method, on the contrary, appellant argues, they specifically distinguish their invention on this basis. The Examiner has reviewed these arguments, however the Examiner maintains her position. The reference to paragraphs [0004] and [0005] have no discussion of "preheating" the product to be coated before coating. Rather they discuss what temperature the aluminum melt should be heated to. As noted in the 35 USC 112, second paragraph rejection (Ground C, see the **Grounds of Rejection** above), it is unclear from a reading of the wording of the claims what is required not to be preheated – the product to be coated? the aluminum alloy?, etc; and what austenitic temperatures are referred to – the product to be coated?, the aluminum alloy?. From the possible preheating requirements, the Examiner has interpreted the claim as requiring that the product to be coated not be preheated to within the austenitic temperature of the product to be coated (which as noted by Rallis, column 2, lines 15-21, would be above 1341 degrees F, 727 degrees C for the steel). The present disclosure provides generally "preparing the surface" with jet abrasive preparing and then goes on to describe specific features of the aluminum alloy coating using a melt. To one of ordinary skill in the art this simply does not amount to it being apparent that

commonly known "preparing" steps would NOT be included, such as, as shown by Rallis and Gierek, conventionally known cleaning and preheating steps for the product to be coated. In fact, from the shown prior art, it appears that one of ordinary skill in the art would expect preheating of the product to be coated to be conventional. Rather, the description in the disclosure merely indicates that the focus of the claimed invention is on the abrasive treatment and the details of the melt coating with the aluminum alloy. Here, a lack of disclosure about what happens before the focus of the claimed invention would not rise to a teaching that conventional steps necessarily do not happen. Thus, the Examiner has shown why a person skilled in the art would not recognize that the product to be coated is not preheated. If appellant is arguing that the lack of "preheating" means that the aluminum alloy melt is not preheated to above the austenitic temperature, appellant has not clarified the claim so that such is required as noted in the 35 USC 112, second paragraph rejection of the claim.

At page 6 of the Appeal Brief, appellant argues that as to the lack of copper in the melt (Ground A (B) in the **Grounds of Rejection** above), that the concept that appellant's process does not involve introduction to copper into the melt is reasonably conveyed from the specification as originally filed, with the description and preferred embodiments not describing copper or the use of other elements besides zinc, silicon, magnesium and tin as alloys. The Examiner has reviewed these arguments, however, her position is maintained. As discussed in the **Grounds of Rejection** above, the lack of a positive recitation of copper is not a basis for exclusion given the comprising language

of the original specification (that indicates that the alloy can include other than the specifically listed ingredients; see page 3, second paragraph and page 4, lines 1-2 of the specification) and the known conventional use of copper as an alloying material in aluminum alloys with zinc, silicon, magnesium and tin, as shown by Japan 50-005213. Applicant has made no showing that one of ordinary skill in the art would, from a reading of the present disclosure, necessarily think that copper was excluded. In fact, from the shown prior art, it appears that one of ordinary skill in the art would expect inclusion of copper to be conventional.

At page 7 of the Appeal Brief, appellant argues that as to the plunging time for the aluminum melts (Ground A (C) in the **Grounds of Rejection** above), to provide a plunging time for 2 minutes or less is literally supported by Tables 1 and 2, which describe time periods from 2 minutes (120 seconds) or less. The Examiner has reviewed these arguments, however, her position is maintained. The only support for plunging time (time of exposure to the melt) is provided in Table 1 and 2 of the specification. Of all times of exposure (as described in Tables 1 and 2) to a melt, 40 seconds is the least amount of time (and thus no indication of 0-up to 40 seconds is provided); and 120 seconds is the most amount of time. However, the 120 second and 40 second period of exposure are for comparative examples. The time of exposure given in the specification for the actual invention (coat with aluminum alloy with zinc, silicon, magnesium and tin at 660-680 degrees C) is precisely 70 seconds in Table 1 and 70 or 80 seconds in Table 2. There is no indication that the exposure time can be less or more for the claimed

invention. Thus, there is simply no support for the broad range of 120 seconds or less claimed from the disclosure as filed.

Ground B. Rejection under 35 USC 112, first paragraph, Enablement

At pages 7-8 of the Appeal Brief of November 17, 2008, appellant first provides statements as to the case law of enablement. At pages 8-9 of the Appeal Brief, appellant argues that as to the understanding of what is required by "Mandrel test", a simple Google search indicates that this is a commonly known test in the industry for determining the flexibility and adhesion of surface coatings by bending coated metal panels around mandrels, citing "composite.about.com." Appellant further argues that they are not required to explicitly describe terms that are well known in the art such as "Mandrel test", and moreover, the Examiner has the initial burden to establish a reasonable basis to question enablement. Appellant argues that since the "Mandrel test" is a term that is well known in the art, it would not require an undue amount of experimentation for a person skilled in the art and make and/or use the Mandrel test set forth in the claims. The Examiner has reviewed these arguments, however, her position is maintained. The Examiner first notes that appellant, in the disclosure, has not referred to a specific test, but rather provided a general description of a testing with bending (page 3, first paragraph "Plasticity of the coatings was estimated by testing the pattern on bending around the cylindrical mandrel, while wending on which the coating on the pattern doesn't break", with Tables 1 and 2 providing a heading

"Minimum diameter of mandrel, mm", which appears to indicate that 10 mm refers to mandrel diameter). The Examiner has clearly met the initial burden of establishing a reasonable basis to question enablement, by noting the various issues as to why it is unclear what is required by this testing process, so that it can be reproduced, understood or compared, including the questions as to what is meant by "pattern" or "wending", what degree of winding is required, what the thickness of the substrate is, what the mandrel is made from, for example. Appellant's general citation that "Mandrel test" is a commonly known test (Appellant has provided a citation to "composite.about.com", that simply defines a "mandrel test" as "the test for determining the flexibility and adhesion of surface coatings by bending coated metal panels about mandrels" (see the supplemental Appeal Brief of February 2, 2009)) , in no way provides a showing through convincing argument and/or evidence that what is described by appellant's disclosure is the same "Mandrel test" and, further, what one of ordinary skill in the art would understand the features of a "Mandrel test" to require such that the issues raised by the Examiner as to what is meant by "pattern" or "wending", what degree of winding is required, what the thickness of the substrate is, what the mandrel is made from, for example, are clarified. Since the "Mandrel test" information provided by appellant does not allow for reproducing, understanding or comparing, it would clearly require an undue amount of experimentation to make and/or use the Mandrel test of the claims.

Ground C. Rejection under 35 USC 112, second paragraph

At page 9 of the Appeal Brief of November 17, 2008, appellant argues that as to the confusion in claim 1 (and claims 2, 4 and 5) as to what is required by "or preheating to within austenitic temperatures", in the April 22, 2008 Response, claim 1 was amended to specify that the coatings are applied on the cast iron and steel products without preheating prior to the plunging step, and that it is only during the plunging step that the temperature of the melt is in the range of 660-680 degrees C. The Examiner has reviewed this argument, however, she disagrees with appellant's position. This statement seems to say that it is the plating bath that is not preheated before immersion -- however, (1) it would seem that it would be impossible not to preheat the bath (to melt the materials) before immersion or the material would not be molten to immerse, and (2) the actual wording of the claims as provided still does not clarify what is preheated or not -- the substrate, the alloy material, etc.; or what austenitic temperature are referred to.

As to the language pertaining to the Mandrel test in claim 1 (and claims 2-5), appellant argues, at page 9 of the Appeal Brief, that the claim is sufficiently clear as to the Mandrel test, especially to persons skilled in the art already familiar with the Mandrel test. The Examiner has reviewed these arguments, however, the Examiner's position is maintained. As discussed in the 35 USC 112, first paragraph rejection as to enablement above (**Ground B**), appellant has not provided appropriate convincing arguments and/or evidence that the Mandrel test as described in the disclosure would

be understood by those of ordinary skill in the art to refer to a specific known Mandrel test. Since one does not know what the test is, the confusion, as discussed above, remains as to what is required.

As to the language in claim 4, as to "or preheating to within austenitic temperature prior to the plunging step the product prior to plunging in the melt", appellant argues at page 10 of the Appeal Brief, that it is not understood what is confusing about this statement, which simply states that the product is not preheated prior to plunging into the melt, and does not allow for heating prior to the coating step. The Examiner has reviewed these arguments, however, the Examiner disagrees. First, appellant is not appealing the rejection of claim 4 -- see the statements throughout the Appeal Brief as to "claims 1-3 and 5" being appealed and in the Claims Appendix claim 4 is not provided as an appealed claim. Furthermore, it remains her position that the language "prior to the plunging step the product prior to plunging in the melt" appears to confusingly duplicate the "prior to the plunging" statements.

Ground D. Rejection under 35 USC 103(a) using Rallis in view of Japan 50-005213

At pages 10-11 of the November 17, 2008 Appeal Brief, appellant first provides a statement of case law as to obviousness. Then, at pages 11-12 of the Appeal Brief, appellant argues that Rallis requires preheating prior to the plunging step to a temperature above 1341 degrees F to within the austenitizing temperature range of the carbon or alloy steel (column 2, lines 18-21) which is disallowed by the claims, and that

'213 does not provide this missing teaching. As to the Examiner's position that it would have been obvious to perform the coating method of Rallis in view of '213 without preheating on the basis that "it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before only involves routine skill in the art, appellant argues that this is not a mechanical rule and the art as a whole must be evaluated, and the use of per se rules is improper; and here the Examiner has failed to meet the initial burden of proof for obviousness by failing to provide a reasonable suggestion for eliminating the preheating step of Rallis. The Examiner has reviewed these arguments, however, her position of obviousness is maintained. Claim 1, for example, requires applying the aluminum coating on the products without "preheating to within austenitic temperature prior to the plunging step" (as in claim 1). The Examiner has noted in the 35 USC 112, second paragraph rejection (see the **Ground of Rejection** above) that it is unclear from this wording as to what is required not to be preheated – the product to be coated? the aluminum alloy?, etc; and what austenitic temperatures are referred to – the product to be coated?, the aluminum alloy?. From the possible preheating requirements, the Examiner has interpreted the claim as requiring that the product to be coated not be preheated to within the austenitic temperature of the product (which as noted by Rallis, column 2, lines 15-21, would be above 1341 degrees F, 727 degrees C for the steel); and appellant appears to be referring to the same by citing column 2, lines 18-21 of Rallis, which refers to the preheating of the tool (product to be coated) before

treatment. As to the preheating of the product to be coated before treatment, while Rallis does provide preheating to within the austenitizing temperature, the Examiner has specifically indicated why it would have been obvious to one of ordinary skill in the art to omit the step of preheating. While applicant argues that the Examiner has not considered the reference as a whole and or made a fact specific analysis, the Examiner disagrees. A reading of the reference as a whole, and analyzed indicates that all of the described steps, including preheating are provided to achieve a yield strength of a minimum of 60,000 psi. This provides products for use in corrosion and high temperature environments (column 1, lines 15-25 of Rallis). However, it is the Examiner's position that one of ordinary skill in the art would know that steel, etc. is not always used in such corrosion and high temperature environments and high strength is not always needed; as shown by Rallis at column 1, lines 15-25, of the references to specific tools that are used in such specific environments, which indicates that there are tools used in conditions where these environments are not present. As a result, it is entirely reasonable to provided that when high strength is not needed, one of ordinary skill in the art would clearly understand that the preheating austenitizing step would not be needed, which would allow saving time and energy, as it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art. *In re Karlson*, 136 USPQ 184. Furthermore, if the aluminum alloy bath is what is not to be "preheated" to within austenitic temperatures, in Rallis the bath is heated from 1000

degrees F (538 degrees C) to below 1341 degrees F (727 degrees C) (column 2, lines 34-40) and thus is below the austenitic temperature of the product to coated at the time of immersion, and thus the temperature of the bath is "preheated" for use to a temperature below austenitic.

Ground E. Rejection under 35 USC 103(a) using Gierek in view of Rallis and Japan 50-005213

At pages 12-13 of the November 17, 2008 Appeal Brief, appellant argues that Gierek does not disclose alloying with zinc, silicon, magnesium and tin, but rather discloses alloying the aluminum with a single material, with no suggestion to modify Gierek to use the four claimed alloy materials. The Examiner has reviewed these arguments, however, her position is maintained. Gierek does disclose that each of the four materials (zinc, silicon, magnesium and tin) can be alloyed with the aluminum (column 2, lines 50-53). Although Gierek does not explicitly disclose that that alloys combined of aluminum and more than one of these materials can be used, the Examiner has further provided Rallis and '213 as to the suggestion and coventionality of using all four of these materials in combination when providing aluminum alloys. One of ordinary skill in the art would expect desirable results from following the process of Gierek, when using the alloy of a combination of the four materials with aluminum suggested by Rallis and '213, because as noted in the **Grounds of Rejection** above, Rallis shows alloys of aluminum for aluminum alloy melt plating can include mixtures

of the materials, and '213 shows a desirable aluminum alloy has all four claimed alloy materials, and in Gierek each of the individual materials can be used, indicating that no component described would be incapable of being used or unacceptable for being used in the described application process of Gierek.

Appellant further argues, at page 13 of the Appeal Brief, that Rallis in view of Japan '213 does not teach the preparation of aluminum alloy on cast iron and steel products without preheating prior to the plunging step to a temperature within the austenitizing temperature range, and Gierek also teaching preheating within this temperature range with upper bounds 270 degrees C higher than the upper temperature allowed by the present invention. As to the Examiner arguing that when claimed ranges overlap or lie inside ranges disclosed by the prior art, a prima facie case of obviousness exists, appellant argues that it is not clear what result the Examiner thinks would be "optimized" by substantially lowering the temperature disclosed by Gierek to below austenitiziing range to arrive at appellant's claimed preheating range. The Examiner has reviewed appellant's arguments, however, the rejection is maintained. In the rejection using Gierek in view of Rallis and '213, the primary reference to Gierek is provided as to the claimed without "preheating to within austenitic temperature prior to the plunging step" (as in claim 1). The Examiner has noted in the 35 USC 112, second paragraph rejection (see the **Ground of Rejection** above) that it is unclear from this wording as to what is required not to be preheated – the product to be coated? the aluminum alloy?, etc; and what austenitic temperatures

are referred to – the product to be coated?, the aluminum alloy?. From the possible preheating requirements, the Examiner has interpreted the claim as requiring that the product to be coated not be preheated to within the austenitic temperature of the product (which as noted by Rallis, column 2, lines 15-21, would be above 1341 degrees F, 727 degrees C for the steel). As noted in the **Ground of Rejection** above, Gierek teaches that the product to be coated is preheated at 100 to 400 degrees C (column 2, lines 58-51), well below the austenitic temperature. As to preheating with upper bounds 270 degrees C higher than the upper temperature of the present invention, appellant appears to be referring to the broad range of temperature of the aluminum alloy bath (column 3, lines 53-57). This is not preheating of the substrate product to be coated, but rather the temperature of the aluminum alloy bath (melt) at the time of immersion, which overlaps with appellant's claimed (660-680 degrees C) temperature of the bath. The optimizing of the range is to optimize the temperature of the bath at the time of immersion, not the preheating temperature for the product to be coated. As noted before, appellant's language in the claims leaves multiple interpretations of what is to be preheated and the Examiner has provided a reference with a preheating condition that reads on the claimed preheating process. Furthermore, even if the aluminum alloy bath is what is to be "preheated", it would still have been obvious to optimize to within the claimed range of applicant of 660-680 degrees C, since this is the temperature desired for plating, and thus the temperature the bath would be heated to; and this temperature is below the austenitic temperature. As to optimizing the temperature of

the bath to the claimed 660-680 degrees C, Gierek provides an aluminum alloy bath temperature range of approximately 550 to 950 degrees C, including 650 degrees C, and where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). It would be reasonably be expected that the desirable improvement would occur by heating in the range of 550-950 degrees C since this is the desired range taught by Gierek and 660-680 degrees C is within that range. One is not randomly lowering the temperature from austenitic, but rather providing the suggested optimization from the entire range of Gierek, which even has an example (at 550-650 degrees C, column 5, lines 29-31) of temperatures below the austenitic range.

As to the lack of copper in the claimed invention, appellant argues, at page 13 of the Appeal Brief, that the Examiner has asserted that the statement in '213 that a desirable alloy includes 0.5 % copper is a typographical error in the English Abstract, by citing page 61, first column of Japan '213 indicating that 0-5% copper can be used, but according to appellant it is more likely that the 0-5% copper is the typographical error. The Examiner has reviewed this argument, however, the Examiner disagrees with appellant's position. The teaching within the Japanese patent document of '213 (page 61, 1st column of original, page 2 of translation) is the controlling teaching of what '213 itself provides, and thus the range of 0-5 % controls. The rejection uses '213 itself. The provision of 0.5% in the abstract is in a separate document later provided by Derwent.

Furthermore, the Examiner has also clearly provided why the abstract provision of 0.5% by Derwent is clearly a typographical error, because within that same Derwent abstract is a provision of Cu at 0.02% is made, which contradicts 0.5%, but is within the range of 0-5% (in a specimen corresponding to example 1 of '213, at the Table at page 62, first column of the original, page 7 of the translation).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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